

S/044/63/000/001/041/053
A060/A000

AUTHOR: Kryukov, V.P.

TITLE: Probabilistic analysis of the distribution curve for the exploitation period of hydrological structures

PERIODICAL: Referativnyy zhurnal, Matematika, no. 1, 1963, 22 - 23, abstract 1486
(Tr. Leningr. gidrometeorol. in-ta, 1961, no. 11, 160 - 188)

TEXT: Say, one has a series of observations of some hydrological parameter (for example, the maximum monthly water output for a year) for n years. These quantities are ordered by increasing magnitude. It is assumed that the value of the parameter for the next year will fall with equal probabilities in any of the $n + 1$ intervals (including the extreme left and extreme right) among the already observed values (sections) independent of the number of these intervals, so that the probability that the zeroth section remains the zeroth is $P_{00}^{(1)} = \frac{n}{n+1}$, and the probability that the zeroth section will become the first one is $P_{01}^{(1)} = \frac{1}{n+1}$. Analogous constructions are made for the remaining sections, and also for the

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probabilities of transition in 2, 3, ... steps (years). In the general case in N predicted years, the section with number m will become the section with number $m + j$ ($j = 0, 1, 2, \dots, N$) with probability

$$\left(\prod_{s=0}^{m-1} \frac{n-s}{N+n-s} \right) \left(1 + \prod_{f=0}^{j-1} \frac{(N-f)(m+f)}{(N+n-f-m)(f+1)} \right).$$

It is proposed to partially determine the matrix of transition probabilities and as a confidence limit of the distribution curve for exploitation life of the structure to take the quantity

$$P_j^{(m)}(N, n) = \left(\prod_{s=0}^{m-1} \frac{n-s}{N+n-s} \right) \times \left(1 + \sum_{j=j_H}^{j_B} \prod_{f=0}^{j-1} \frac{(N-f)(m+f)}{(N+n-f-m)(f+1)} \right),$$

where j_H and j_B are determined from the conditions that one should sum the maximal transition probabilities, and that the sum of the remaining transition probabilities should not exceed 0.01 (or 0.05). Graphs and matrices for 99% and 95% confidence limits of the transition probabilities for $m = 1, 2, \dots, 5$ for a

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Probabilistic analysis of the distribution curve

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fifty-year exploitation life. A certain laxity should be noted in the formulae, particularly at the point devoted to the basic data on Markov chains.

A.Kh. Zaslavskiy

[Abstracter's note: Complete translation]

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KRYUKOV, V. F.

Calculation of reliable intervals of a distribution curve.
Trudy Len. gidromet. inst. no.11:124-151 '61.
(MIRA 16:1)

(Runoff) (Distribution(Probability theory))

KRYUKOV, V. F.

Probable calculation of a distribution curve for the period of
exploitation of hydraulic structures. Trudy Len. gidromet.
inst. no.11:160-188 '61. (MIRA 16:1)

(Hydraulic structures)
(Distribution(Probability theory))
(Runoff)

Metalwork

Straightening cylindrical products on threadcutting machines. Vest.mash. 32 No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1958, Uncl.

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The electrochemical reduction of acetaldehyde giving ethyl alcohol. M. YAKOVAN AND V. O. KAYUKOV. J. Chem. Ind. (Moscow) 1933, No. 1, 34-5 - Reduction occurs best at a c. d. of 3.6 amp. per sq. dm. The concn. of aldehyde should not fall below 3.7%.

KRIUKOV V. G.

Rol' nukleinovykh kislet v biologicheskikh formoobrazovatel'nykh protsessakh; iavleniya kolloidnoi zashchity, koagulatsii i strukturno-obrazovaniia pri vzaimodeistvii belkov s polimukleotidami.
Role of nucleic acid in biological formative processes;
phenomena of colloid defense coagulation and structural formation
in reaction of proteins with polymucleotides. Izv. Akad. nauk
SSSR. Ser. biol., Moskva No. 5 Sept-Oct 50 p. 110-24.

1. Cytological Laboratory of the Institute of Experimental Biology
of the Academy of Medical Sciences USSR.

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113

Transformation of some soluble proteins into insolubles by nucleic acids. V. G. Kavalova. *Biochim. Akad. Nauk S.S.R.*, 73, 141-4 (1961). -- The hydrolytic action of nucleic acids, expressed by unfolding of protein chains, thus reducing their solv., was demonstrated. Edestin readily forms spheres of insol. protein config. the unchanged soln. when treated with coagulants, especially easily done by exposure to boiling H₂O for 30 sec.; formalin yields such spheres at 0.6 M concn., whereas ribonucleic acid is active at 0.007-0.018 M. Mononucleotides were ineffective. Treatment of the spheres prep'l. by the nucleic acid treatment with reagents capable of removing the latter (ribonuclease or washing with H₂O) failed to disrupt the spherical structures indicating true insolubilization of the protein. (G. M. Knudsen)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

GTRPL Vol. 5 No. 1 Jan. 1952

Kryukov, V.G. (Cytological Laboratory, Institute of Experimental Biology, U.S.S.R. Academy of Medical Sciences). Role of nucleic acids in biological formative processes. I. Phenomena of cellloid protection, coagulation and structural formation during interaction of proteins with polynucleotides. 110-24

Investiya Akademii Nauk, S.S.R., Seriya Biologicheskaya No. 5

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

LEPESHINSKAYA, O.B.; KHYUKOV, V.G.

Certain errors in interpretation of the theory of development of living substances. Izv. Akad. nauk SSSR; Ser. biol. no.3:16-24 May-June 1953.
(CLML 25:1)

"APPROVED FOR RELEASE: 04/03/2001

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CIA-RDP86-00513R000826920003-1"

MAZITOV, Sh.S.; KRYUKOV, V.I.

New design of a frontal grass mower in Tajikistan. Izv.
Otd. est. nauk AN Tadzh. SSR no.3:131-137 '59. (MIRA 15:5)

1. Otdel mekhaniizatsii AN Tadzhikskoy SSR.
(Tajikistan—Mowing machines)

KRYUKOV, V.I.; LOPATKIN, I.I.

Using manure-soil composts. Zemledelie 23 no.5:54-59 My '61.
(MIRA 14:4)

1. Sekretar' Diveyevskogo Rayonnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza, Gor'kovskoy oblasti (for Kryukov).
2. Glavnyy agronom rayonnoy inspeksii po sel'skomu khozyaystvu (for Lopatkin).

(Compost)

KRYUKOV, V.I.

Condensate removal from drying cylinders. Bumagodel. mash. no. 8:66-78
160. (MIRA' 14:3)

(Papermaking machinery)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000826920003-1"

VOYTOV Pavel Ivanovich; KRYUKOV, V.L.; GURLEVICH, M.M., tekhnicheskiy
redaktor

[Mechanization of vegetable cultivation] Mekhanizatsiya vospelyvaniya
ovoshchnykh kul'tur. Moskva, Gos. izd-vo selkhoz. lit-ry,
1956. 164 p. (MLRA 9:9)
(Vegetable gardening) (Agricultural machinery)

OS'KIN, A.I.; KRYUKOV, V.L., red.

[Technology of corn harvesting with the remodeled SK-3
and SK-4 combines, its postharvest processing and storage]
Tekhnologiya uborki kukuruzy pereoborudovannymi kombai-
nami SK-3 i SK-4, ee posleuborochnaia obrabotka i khranenie
zerna. Moskva, Biuro tekhn. informatsii i reklamy, 1963. 57 p.
(MIRA 17:5)

TESLENKO, Ivan Ivanovich; KITASHOVA, Valentina Fedorovna;
KUZNETSOVA, L.A., red.; KRYUKOV, I.L., spets. red.

["Carousel-type" milking systems; farm practices in the
use of milking conveyors] Doil'nye ustroystva "Karousel";
iz opyta primeneniya konvekternykh doil'nykh ustroystv.
Moskva, Biuro tekhn. informatsii, 1964. 95 p.
(MIRA 18:5)

KRYUKOV, V M

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Proyektirovaniye khlopkopryadil'nykh fabrik (Designing cotton-spinning factories) Moskva, Gizlegprom, 1950.
274 p. Illus., diagrs., tables.
Bibliography: p. 271.

AB 520649

KHYUKOV, V.M., kandidat tekhnicheskikh nauk.

Operating technique of new cotton spinning enterprises. Tekst.
prom. 14 no.8:17-20 Ag '54. (MLRA 7:10)
(Cotton spinning)

KRYUKOV, Vasilii Mikhaylovich, kandidat tekhnicheskikh nauk; AFONCHIKOV, P.A.,
retsenzent; ZAMAKHOVSKIY, L.I., nauchnyy redaktor, retsenzent, kandi-
dat tekhnicheskikh nauk; KOPILAVICH, Ye.I., redaktor; MEDVEDEVA, L.A..
tekhnicheskiy redaktor

[Designing cotton spinning mills] Proektirovanie khlopkopriadiel'nykh
fabrik. Izd. 3-e, perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo
Ministerstva legkoi promyshl. SSSR, 1956. 391 p. (MLRA 10:4)
(Cotton spinning) (Textile factories)

KRYUKOV, V.M., kand. tekhn. nauk

Answer to P.I.Aristov's review. Tekst. prom. 18 no. 7:63 J1 '58.
(MIRA 11:7)
(Cotton spinning)

KRYUKOV, V. M.

SVYATOSLAVOV, Nikolay Ivanovich, kand.tekhn.nauk; BELYAYEV, Boris Alekseyevich; KOKORIN, V.V., retsenzent; KRYUKOV, V.M., spetsred.; OHLLOVA, L.A., red.; KNAKHIN, N.T., tekhn.red.

[Cotton opening and picking equipment] Razrykhlitel'no-trepal'nyi agregat dlia khlopya. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po lekkoi promyshl., 1959. 130 p. (MIRA 13:3)

1. Glavnnyy konstruktor zavoda Kustekstil'mash. (for Belyayev).
(Cotton machinery)

KHUKOV, V.M., kand.tekhn.nauk

New design of rings for ring frames manufactured by the Platt
factory. Tekst.prom. 19 no.8:85-87 Ag '59. (MIRA 13:1)
(Spinning machinery)

KRYUKOV, V. M.

Kryukov, V. M. -- "Agrobiological Peculiarities and Methods of Cultivation of Winter Wheat in the Presence of Irrigation in the Trans-Volga Region." Min Higher Education USSR, Saratov Agricultural Inst, Saratov, 1954 (Dissertation for the Degree of Candidate in Agricultural Sciences)

SO: Knizhnaya Letopis', No. 24, Moscow, Jun 55, pp 91-104

KRYUKOV, V.N.

Some mechanisms of the injurits of human cranial and pelvic
bones. Sud.-med.ekspert. 7 no. 2:11-14 Ap-Je '64. (MIRA 17:7)

1. Kafedra sudebnoy meditsiny (zav. - dotsent V.N.Kryukov)
Altayskogo meditsinskogo instituta, Barnaul.

KRYUKOV, V.N., kand.sel'skokhos.nauk

Cultivating soil for winter crops when preceded by corn fallow.
Zemledelie 8 no.7:70-71 '60. (MIRA 13:9)

1. Kurskiy sel'skokhozyaystvennyy institut.
(Tillage) (Grain)

KRYUKOV, V.N., Cand Med Sci -- (diss) "Study of
fractures of ~~two~~ long ^{tubular} bones ^{in relation to} evaluation
of ~~the~~ direction of ~~the~~ blow." Mos, 1958, 11 pp with
illu trations (Second Mos State Inst im I.I. Pirogov)
200 copies (KL, 23-58, 112)

- 137 -

KRYUKOV, V.N.

Expert evaluation of subcutaneous emphysema while viewing the
corpse at the accident site. Sud.-med. ekspert. 4 no. 4:52-53
O-N-D '61. (MIA 14:12)

1. Kafedra sudebnoy meditsiny Altayskogo gosudarstvennogo
meditsinskogo instituta.
(EMPHYSEMA) (MEDICAL JURISPRUDENCE)

KRYUKOV, V.N.

Some aspects of organizing the training of medical personnel in college. Zdrav. Ros. Feder. 5 no.9:13-15 S '61. (MIRA 14:9)

1. Iz Altayskogo meditsinskogo instituta.
(ALTAI TERRITORY—MEDICAL PERSONNEL)

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PANKOV, Ye.V. (Sverdlovsk); KRYUKOV, V.N., dotsent (Sverdlovsk);
TIMOSHKOV, V.M., kand. tekhn. nauk (Sverdlovsk)

Highly productive operations of a classification yard.
Zhel. dor. transp. 47 no.5:18-22 My '65.

(MIRA 18:6)

1. Glavnnyy inzh. stantsii Sverdlovsk-Sortirovochnyy
(for Pankov).

KRYUKOV, V.P., inzh.; PODOYNITSYN, B.A.; SAFONOV, A.Ye.

Automatic regulation of pulp alkalinity. Mekh.i avtom.proizv.
15 no.8:35-36 Ag '61. (MIRA 14:9)
(Flotation) (Automatic control)

KRYUKOV, V.P., inzh.; NESTEROV, G.S., inzh.

Dynamic characteristics of technological equipment of ore-dressing plants. Izv. vys. ucheb. zav.; gor. zhur. 5 no.1: 159-164 '62. (MIRA 15:4)

1. Ural'skiy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki poleznykh iskopayemykh. Rekomendovana kafedroy avtomatizatsii proizvodstvennykh protsessov Sverdlovskogo gornogo instituta.

(Ore dressing—Equipment and supplies)

KRYUKOV, V.P.

Session of the Geographical Faculty of Leningrad University
devoted to the results of the International Geophysical Year.
Vest. LGU 15 no.18;161-162 '60. (MIRA 13:9)
(International Geophysical Year, 1957-1958)

KRYUKOV, V.P., inzh.; SAFONOV, A.Ye., inzh.; Prinimal uchastiye:
PODOYNITSYN, B.A., inzh.

Automatic control of the alkalinity of pulp in flotation.
Izv. vys. ucheb. zav.; gor. shur. no.6:136-140 '61.

(MIRA 16:7)

1. Ural'skoye otdeleniye Vsesoyuznogo nauchno-issledovatel'-skogo instituta mekhanicheskoy obrabotki poleznykh iskopayemykh. Rekomendovana kafedroy avtomatizatsii proizvodstvennykh protsessov Sverdlovskogo gornogo instituta.

(Krasnoural'sk--Flotation)
(Automatic control)

KRYUKOV, V.P.

High-quality dissertations. Vest.LGU 16 no.18:129-131 '61.
(MIRA 14:10)
(Geography)

KRYUKOV, V.P.

Session of the university's geographers. Vest. LGU 17
no.18:146-148 '62. (MIRA 15:10)
(Geography)

KRYUKOV, V.P., kand.tekhn.nauk; SAFONOV, A.Ye., inzh.; PAKULIN, A.A.,
inzh.; SAMOYLOV, G.F.

Transducers in the equipment for determining the content of iron.
Izv.vys.ucheb.zav.; gor.zhur. 7 no.2:156-159 '64. (MIRA 17:3)

1. Ural'skiy nauchno-issledovatel'skiy institut mekhanicheskoy ob-
rabotki poleznykh iskopayemykh. Rekomendovana kafedroy avtomati-
zatsii proizvodstvennykh protsessov Sverdlovskogo gornogo insti-
tuta.

ARSHINSKIY, V.M.; BAGAUTINOV, G.A.; BESPALOV, M.V.; GASPAROVICH, P.I.;
GOLOMIDOV, I.N.; GOLUBOV, G.B.; GRIN, L.T.; ZEL'SKIY, S.A.;
IL'INYKH, A.F.; KOZIN, V.Z.; KRYUKOV, V.P.; KULAKOV, S.N.;
LUKAS, V.A.; MINEYEV, V.A.; PETROV, Yu.S.; PIRUSHKO, M.G.;
PROKOF'YEV, Ye.V.; REBETS, B.A.; STARTSEV, N.V.; TROP, A.Ye.,
prof.; KHARAMOV, V.A.; ABRAMOV, V.I., otv. red.; PROZOROVSKAYA,
V.L., tekhn. red.; BOLDYREVA, Z.A., tekhn. red.

[Handbook on electric equipment for mines] Spravochnik gorno-
go elektrotekhnika. Pod obshchei red. A.E.Tropa. Moskva,
Gosgortekhizdat, 1962. 400 p. (MIRA 16:5)
(Electricity in mining)

KRYUKOV, V.V., inzhener.

Balancing piston engines. Energomashinostroenie no.1:16-17 0 '55.
(MLRA 9:5)

(Gas and oil engines) (Balancing of machinery)

*26.2121*S/114/61/000/012/004/006
E194/E955

AUTHOR: Kryukov, V. V., Candidate of Technical Sciences
TITLE: The optimum peripheral speed for a turbine runner
running on a variable gas flow
PERIODICAL: Energomashinostroyeniye, no.12, 1961, 39-41

TEXT: Turbine efficiency depends upon the ratio of peripheral speed u to gas flow speed c . If a constant-speed turbine runs with a variable gas speed, the efficiency falls off as the ratio u/c departs from the optimum value. The following expression is obtained for the peripheral speed at which the efficiency is maximum:

$$u_{opt} = \frac{\int_{t_1}^{t_2} c^2 dt}{\int_{t_1}^{t_2} c dt} \quad (7)$$

where the efficiency is given by:

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The optimum peripheral ...

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$$\eta_T = a \frac{u}{c} - b \left(\frac{u}{c} \right)^2 \quad (5)$$

a , b are constants for a given turbine. Then, if changes in the gas conditions are known, the integral in the numerator of expression (7) is the mean square speed $(c^2)_{cp}$ during the cycle, and the integral in the denominator is the mean speed for the cycle c_{cp} . This gives

$$u_{opt} = \frac{a}{2b} \cdot \frac{(c^2)_{op}}{c_{cp}} \quad . \quad (8)$$

Then, $(c^2)_{op}/c_{cp}$ may be considered as a theoretical mean flow rate \bar{c} , and:

Card 2/3

For a variable peripheral ...

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E194/E955

$$u_{\text{opt}} = \frac{a}{2b} - \bar{c} \quad (9)$$

When the peripheral speed is to be calculated for a mean inlet gas pressure, the value of \bar{c} in Eq.(9) is taken as the constant speed corresponding to the mean gas pressure p_m . A numerical example is worked out for an impulse-type gas turbine working on internal-combustion engine exhaust-gas and it is found that the error in calculating the optimum speed is about 2.8%. Thus, it seems quite permissible to use the mean inlet gas pressure in calculating the optimum speed of a turbine running on a variable gas flow. There are 3 figures, no tables and 1 Soviet-bloc reference.

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CONT-3/3

KRYUKOV, V.V., inzh.

Irrigation of corn in the trans-Volga area based on Volgograd
Reservoir. Gidr. i mel. 13 no.12:11-20 D '61.
(MIRA 14:12)

1. Volgogradskiy filial 'Idroprojekta.
(Volgograd Province—Corn(Maize)...Irrigation)

VILE, Ivan Ivanovich; ~~KNYUKOV, V.V.~~, kand. tekhn. nauk, retsentent;
~~DUGIN, N.A.~~, tekhn. red.

[New developments concerning the cycle of operations of engines; speed of combustion and the cycle of operations of engines] Novoe o rabochem tsikle dvigatelei; skorost' zgoraniia i rabochii tsikl dvigatelia. Moskva, Mashgiz, 1962. 270 p.

(Gas and oil engines)

KRIUKOV, E.I. [Kryukov, Ye.I.]

Manufacture of articles from wood plastics. Ratsionalizatsiya
13 no.4:21 '63.

KRYUKOV, Ye.P., kand.tekhn.nauk

The approximate relation between the amount of horizontal stress
and the angle of inclination of a rigid foundation in an
area of small deformations of the soil. Trudy TSNILS no.47:
28-40 '63. (MIRA 16:5)
(Foundations) (Soil mechanics)

KRYUKOV, Ye.P., kand.tekhn.nauk

Maximum permissible load on large-diameter piles. Gidr. stroi.
33 no. 5:51-52 My '63. (MIRA 16:5)
(Piling (Civil engineering)—Testing)

KRYUKOV, Ye. P... inzh.

Effect of the subgrade outline on the bearing capacity of single
electric line pole bases. Transp. stroi. 8 no. 7:23-24 J1 '58.

(MIRA 11:7)

(Railroads--Earthwork)
(Electric lines--Poles)

KRYUKOV, Ye.P., insh.

Effect of the width of individual pole bases on their bearing capacity during horizontal loads. Transp.stroi. 8 no.12:20-
21 D '58. (MIRA 12:1)
(Electric lines--Poles)

KRYUKOV, Ye.P., inzh.

Distribution of explosive charges in camouflet blasting for
concrete piles. Transp. stroi. 9 no.4:33-35 Ap '59.

(MIRA 12:6)

(Blasting) (Concrete piling)

KHUKOV, Ye.P., inzh.

Taking into consideration roadbed profiles in calculating
foundations of contact-network poles. Transp.stroi. 9
no.10:44-45 O '59. (MIRA 13:2)
(Electric lines--Poles) (Electric railroads)

ZAVRIYEV, K.S., kand.tekhn.nauk; KRYUKOV, Ye.P., kand.tekhn.nauk;
SHPIRO, G.S., kand.tekhn.nauk; KARAMYSHEV, I.A., red.;
BOBROVA, Ye.N., tekhn.red.

[Study of the strength of the foundation of contact networks
supports] Issledovanie resushchey sposobnosti fundamentov opor
kontaktnoi seti. Moskva, Vses.izdatel'sko-poligr. ob"edinenie
m-va putei soob., 1960. 215p. (Babushkin. Vsesoiuznyi nauchno-
issledovatel'skii institut transportnogo stroitel'stva.
Trudy, no.39) (MIRA 14:7)

(Electric lines--Poles)
(Electric railroads==Wires and wiring)

KRYUKOV, Ye.P. (g.Babushkin)

Transformation of problems on straight rods subjected to longitudinal-transverse bending. Stroi.mekh.i rasch.soor. 2 no.4:
8-12 '60. (MIRA 13:7)
(Elastic rods and wires)

KRYUKOV, Ye.P., kand.tekhn.nauk

Taking into account the action of long-time loads in designing
foundations of contact-network poles. Transp. stroi. 10 no.11:
38-40 N '60. (MIRA 13:11)
(Electric lines--Poles)

KRYUKOV, Ye.P., kand.tekhn.nauk

An analogy in the design of rotating disks. Izv.vys.uchob.
zav.; mashinostr. no.4:79-84 '62. (MIRA 15:7)

1. Vsesoyuznyy zaochnyy politekhnicheskiy institut.
(Disks, Rotating)

KANANYAN, A.S.; KRYUKOV, Ye.P.

Concerning A.A.Luga's article "Horizontal pressure of the earth in approach embankments on the foundations of bridge abutments and retaining walls". Osn., fund.i mekh.grun. 4 no.4:21-22 '62. (MIRA 15:8)

(Earth pressure)
(Luga, A.A.)

KRYUKOV, Ye.P. (Moskva)

Transposition of problems of the longitudinal-lateral flexure
of straight rods. Stroi. mekh. i rasch. soor. 4 no.6:30-35 '62.
(MIRA 16:1)
(Elastic rods and wires)

KRYUKOV, Ye.P., kand.tekhn.nauk; SHPIRO, G.S., kand.tekhn.nauk

Determining stresses in radial sections of the shells of columnar foundations. Transp. stroi. 12 no.11:44-47 N '62. (MIRA 15:12)
(Elastic plates and shells) (Bridges—Foundations and piers)

E.P.Tikhonov, V.N. P. - kand. tekhn.nauk

Stability of barges with a stepped profile. Trudy TSNIIS no.46:72~
1962.
(Beams and girders)

KRYUKOV, Ye.P., kand.tekhn.nauk

Experimental studies of the bearing capacity of spirally
guided piles being pulled. Trudy TSNIIS no.45:103-122
'62. (MIRA 15:9)
(Piling (Civil engineering)—Testing)

SMOL'YANINOV, A.A., kand.tekhn.nauk; KRYUKOV, Ye.P., kand.tekhn.nauk;
OREL, A.A., inzh.

Prefabricated elements of the reinforced concrete foundations
of stationary contact network poles with flexible cross pieces.
Trudy TSNIIS no.47:83-104 '63. (MIRA 16:5)
(Precast concrete construction) (Electric lines—Poles and towers)

KOMISSAROV, Mark Avramovich; KRYUKOV, Ye.T., red.; KNYAZEV, V.V., red.;
SERGEYEVA, M.I., tekhn. red.

[Television manual for the viewer] Telezritelju o televizore. Pod
red. E.T.Kriukova. Gor'kii, Gor'kovskoe knishnoe izd-vo, 1961.
139 p.

(MIRA 14:8)

(Television)

KRYUKOV, Yu., inzhener-kapitan

Lay-out of entrances into structures. Voen. vest. 41 no.1:
93-94 Ja '62. (MIRA 16:11)

BOYARSKIY, E.A.; KRYUKOV, Yu.A.

Change in the accuracy of the measurement of angles within the
limits of a single program. Geod. i kart. no.9:31-34 S'62.

(MIRA 15:10)

(Goniometry)

KRYUKOV, Yu.A., student V kursa

Theory of an automatic level for microleveling with an electronic transducer. Trudy MIIGAIK no.50:111-122 '62. (MIRA 16:7)

1, Kafedra prikladnoy geodezii Mezovskogo instituta inzhenerov geodezii, aerofotoshemiki i kartografii.

(Level (Surveying instrument))

(Automatic control)

(Transducers)

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

KRYUKOV, Yu.A., inzh.

Observation program based on sequential analysis. Izv. vys. ucheb.
zav.; geod. i aerof. no.4:67-74 '64.

(MIRA 18:2)

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

ACC NR: AP6036330

(N) SOURCE CODE: UR/0006/66/000/011/0012/0014

AUTHOR: Kryukov, Yu. A.

ORG: none

TITLE: Potentialities of the EOD-1 electrooptical range finder

SOURCE: Geodeziya i kartografiya, no. 11, 1966, 12-14

TOPIC TAGS: surveying instrument, geodetic instrument, geodetic
survey, geodesy, range finder / EOD 1 OPTIC RANGE FINDER

ABSTRACT: The present article describes the increased efficiency of the EOD-1 electrooptical geodetic range finder. The northward movement of geodetic field work in the USSR made it necessary to use the EOD-1 during periods of white nights and over distances of 30 km. The experiments described were performed by the Central Scientific-Research Institute of Geodesy, Aerial Photography, and Cartography (TsNIIGAiK). The high pressure DPSh-100-2 mercury vapor lamp was substituted for the standard STs-70 light source, and polaroid filters were added to eliminate glare. The EOD-1 was field tested on a measured traverse of the TsNIIGAiK near Moscow and in northern regions in order to determine the necessity of introducing correction factors into the measurements when the mercury vapor lamp and polaroid filters are used. Field tests

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UDC: 528 . 517

ACC NR: AP6036330

show that, at distances of 20—25 km, measurements are not influenced by meteorological conditions while in regions of low atmospheric haze and average visibility, observations of 40 km and more are possible. It is shown that, in northern regions, measurements over distances of 15—20 km are possible under favorable observation conditions during periods of white nights.

SUB CODE: 08/ SUBM DATE: none/

Card 2/2

KRYUKOV, Yu. B.

"Study of Iron Catalysts for the Synthesis of
Hydrocarbons From Carbon Monoxide and Hydrogen."
Thesis for degree of Cand. Chemical Sci. Sub
16 Jun 49, Inst of Petroleum, Acad Sci USSR.

Summary 82, 18 Dec 52, Dissertations Presented For
Degrees in Science and Engineering in Moscow in 1949.
From Vechernaya Moskva, Jan-Dec 1949.

Ca

Mechanism of the synthesis of hydrocarbons from carbon monoxide and hydrogen. A. N. Bashkinov, Yu. B. Kryukov, and Yu. B. Kapin. *Doklady Akad. Nauk SSSR*, 67, 1029-31 (1950). The reaction observed on Fe catalysts, $2 \text{CO} + \text{H}_2 \rightarrow \text{CH}_4 + \text{CO}_2$ (I), in contrast to the reaction $\text{CO} + 2 \text{H}_2 \rightarrow \text{CH}_4 + \text{H}_2\text{O}$ (II), occurring on Ni and Co, is interpreted as the sum of the primary reaction II, and the subsequent secondary reaction $\text{CO} + \text{H}_2\text{O} \rightarrow \text{CH}_3 + \text{H}_2$ (III). This point of view is corroborated by analyses of the gaseous products obtained on ppbd. Fe catalyst, with mixts. $\text{CO}:\text{H}_2 = 1:1$ in the presence of added H_2O vapor, at 220 - 40° under atm. pressure, at space velocity $\sim 100/\text{hr}$. The balance, by reaction I, is expressed by $\text{CO} + \text{mH}_2 \rightarrow \frac{1}{x} \text{CH}_3 + \frac{1}{x} \text{CO}_2$, where $x = \text{mole fraction CO reacted}$, $m = \text{moles H}_2 \text{ per mole CO}$. With

reaction III occurring simultaneously with II, the balance is $\text{CO} + \text{mH}_2 + \rho \text{H}_2\text{O} \rightarrow \frac{1}{x} \text{CH}_3 + (\frac{1}{x} - \frac{1}{x} + \rho) \text{CO} + (m - \frac{1}{x} + \rho) \text{H}_2$, where $\rho = \text{mole fraction CO reacted according to equation III}$, and $\rho = \text{moles H}_2\text{O} \text{ per mole CO in the initial gas}$. The contraction δ , in the 1st case, is $\delta = 2x/(1+2x)$ (where $x = \text{CH}_3 \text{ content in the product}$), in the 2nd case, $\delta = (2x/(1+2x)) - [x(1+2x)(1+m)]$. The difference $\Delta = \delta - \delta'$ determined the contraction depression. Experimentally, Δ attains high values, up to 60-70%. H_2O added in amounts up to 20% of the reacting gas mixt. is found to have reacted completely according to III, e.g., with an initial mixt. $\text{CO}:\text{H}_2:\text{H}_2\text{O} = 44.8:44.8:11$, on an Fe-Cu-Zn-K₂O₃-kleveigahr catalyst, at 240° , $x = 30.6\%$, Δ exptl. $= 22.3\%$, calcld. $= 21.4\%$. A gas mixt. $\text{CO}:\text{H}_2:\text{H}_2\text{O} = 33.34:33$, on an Fe-Cu-Mn-K₂O₃-kleveigahr catalyst, at 230° , give a neg. contraction of -32.5% , $x = 29.7\%$, $\Delta = 72.4\%$; the yield of hydrocarbons is depressed by H_2O , but is restored when H_2O is eliminated. The ratio of the rates of reactions III and I, on the 1st catalyst, at 240° , is 3.4, on the 2nd catalyst, at 230° , it is 13.6. The primary reaction on Ni, Co, and Fe is, identically, reaction II, and CH_3 is a secondary product.

N. Thom

AIAA METALLURGICAL LITERATURE CLASSIFICATION

KRYUKOV

4471. GAS ANALYSER FOR TWO THREE AND FOUR COMPONENT MIXTURES. Kryukov.
 Yu. B., Kamzolkin, VV and B shkirov, AN (*Izvest. Akad Nauk S.S.R.*, Otdel. Tekh. Nauk^a (*Bull Acad Sci S.S.R.*, Sect. Tech. A449 Tech Sci), 1649-1659). The apparatus described is suitable for determination of CO, CO₂, H₂, and N₂ (or CH₄). Operation is automatic, the apparatus being inserted in the gas stream, and independent of gas velocity. The principle utilized is flow measurement after successive elimination of the various gas components; CO₂ by absorption CO + H₂ formed, leaving residual N₂ (or CH₄). The necessary calculations based on the readings of the four orifice flow meters required, are explained, and nomograms are given for rapid solution. Calibration of the flow meters is described. With gas flow rates of 12-20 l/hr analysis is somewhat longer. For binary mixtures the error is < 1% for 3-4 components it can attain 1.5%.

Petroleum Inst. A.S. USSR

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

KRYUKOV, YU. B.

USSR/Chemistry - Synthetic Liquid Fuels;
Catalysts

JUL 22

"Concerning the Problem of the Investigation of Liquid Catalysts for the Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen," Yu. B. Kryukov, A. N. Bashkirov

"Trudy Inst Nefti" Vol 2, pp 92-109

The present methods for evaluating the performance of iron catalysts are inadequate. A new method which is more precise has been developed. This method, which is described in detail, consists in determination of the degree of conversion and of all other indices by

243TR4

rational utilization of analytical data on the gases before and after conversion and of other experimentally found values. The method can be used for other catalysts besides iron.

243TR4

KRYUKOV, Yu. B.

USSR/Chemistry - Synthetic Liquid Fuels Jul/Aug 52
"The Role of Oxygen-Containing Compounds in the
Synthesis of Hydrocarbons From Carbon Monoxide and
Hydrogen," Yu. B. Kagan, Yu. B. Kryukov, Ye. V.
Kamzolkin, A. N. Bashkov, Petrolem Inst, Acad
Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4, pp 649-
657

Article states that results of the expts described
show that alcs cannot be regarded as intermediate
products in the synthesis of hydrocarbons, and that
iron catalysts, under the conditions of hydrocarbon
synthesis, accelerate the oxidation of alcs and
aldehydes. Advances hypotheses explaining the for-
mation of oxygen-contg compds (by-products of hy-

229T16

synthesis, accelerate the oxidation of alcs and
aldehydes. Advances hypotheses explaining the for-
mation of oxygen-contg compds (by-products of hy-

229T16

STORCH, H.; KAGAN, Yu.B.[translator]; KRIVUKOV, K.N.[translator];
LOKTEVA, S.M.[translator]; LUK'YANITS, V.O.[translator]; BASHKI-
ROV, A.H., professor, redakteur.

[The Fischer-Tropsch and related syntheses (original title);
translated from the English by Iu.B.Kagan (and others)] Sin-
tes uglevodorodov iz okisi ugleroda i vodoroda. Perevod s
angliiskogo Iu.B.Kriukova, S.M.Lokteva i V.O.Luk'yanitsa.
Pod red. A.N.Bashkirova, Moskva, Izd-vo inostrannoi lit-ry,
1954. 516 p.
(Synthetic process) (Catalysis) (MLRA 7:8)

KRYUKOV, Yu. B.

✓231. OXIDATION OF IRON CATALYSTS BY WATER VAPOUR IN HYDROCARBON
SYNTHESIS. Bashkinov, A.N., Kagan, Yu. B., Kryukov, Yu. B., Fedorovich, R.M.
and Abotinetskaya, M.I. (Izv. Inst. Neftei, Akad. Nauk SSSR (Trans. Inst.
Petrol., Acad. Sci. U.S.S.R.), 1954, vol. 4, 151-158; abstr. In Chem. Abstr.,
1955, vol. 49, 14366). Iron catalysts gradually lose their activity by the
action of water vapour formed during the synthesis of hydrocarbons from
carbon monoxide and hydrogen (ratio 1:1) at 200° and average pressure. The
rate of iron oxidation depends on the oxidation and reduction reactions which
take place during the synthesis. Inactivation of iron catalysts is due to the
formation of ferrous oxide. *Mf*
FE
C.A.

(4)

"APPROVED FOR RELEASE: 04/03/2001

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"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

Kryukov, Yu. B.

USSR/Physical Chemistry - Kinetics. Combustion.
Explosives. Topochemistry. Catalysis.

B-9

Abs Jour : Referat Zhur ~ Khimiya, No 2, 1957, 3852

Author : Bashkirov, A.N.m Khotinskaya M.I., Kryukov Yu.B.
Inst : Institute of Petroleum, Academy of Sciences USSR
Title : Synthesis of Hydrocarbons from Carbon Monoxide and
Hydrogen over "Sintered" Iron Catalysts

Orig Pub : Tr. Insta nefti AN SSSR, 1956, 8, 162-167

Abstract : Study of the effects of the conditions of reduction upon
the mechanical strength and activity of precipitated ac-
tivated Fe-catalysts in the process of synthesis of hy-
drocarbons. After treatment of the catalyst in a current
of H₂ at 800-850° and space velocity of 2000 hour⁻¹ for
2 hours, the reduced and sintered specimens are of suffi-
cient mechanical durability; they are inactive at atmos-
pheric pressure and are highly active at a pressure of
200 atmospheres, temperature of 300° and space velocities

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"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

AUTHORS:

Kryukov, Yu. B., Butyugin, V. K., Liberov, L. G., Stepanova, N. D., Bashkirov, A. N.

62-11-23/29

TITLE:

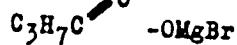
Synthesis of the Butyl Alcohol Containing the Radioactive Carbon Isotope C14 (Sintez butilovogo spirta, soderzhashchego radioaktivnyy izotop ugleroda C14)

PERIODICAL:

Izvestiya AN SSSR, Otdel.Khim.Nauk, 1957, Nr 11, pp. 1404-1406
(USSR)

ABSTRACT:

Here a new method for the synthesis of butyl alcohol, which is tagged by radio-carbon C14, is introduced. This method is characterized by simplicity and a high output of special product. The method consists of two phases: magnesium-organic synthesis of butyric acid with elimination of the latter in the form of sodium-butyrate and the restoration of the salt by lithiumaluminumhydride. The method can be applied for the synthesis of different alcohols containing the radio-carbon C14. It is shown that a synthesis of the tagged butyl alcohol is also possible without preceding elimination of butyric acid by means of immediate restoration of the magnesium-organic complex



by lithiumaluminumhydride. There are 2 Slavic references.

ASSOCIATION:
Card 1/2

Petroleum Institute of the AN USSR (Institut nefti Akademii

Synthesis of the Butyl Alcohol Containing the Radioactive Carbon Isotope C¹⁴ 62-11-23/29

nauk SSSR)

SUBMITTED: June 20, 1957

AVAILABLE: Library of Congress

Card 2/2

KRYUKOV, Yu. B., BASHKIROV, A. N., BUTYUGIN, V. K., LIBEROV, L. G., and STEPANOVA, N. D.
(Petroleum Institute AS USSR)

"Intermediate Compounds in the Synthesis of Hydrocarbons and Oxygen-Containing Compounds of Carbon Monoxide and Hydrogen on Iron Catalysts." p. 58.

Processes and Radiation in Chemistry, Collection of Reports of the All-Union Sci. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, Moscow, Izd-vo ATN SSSR, 1963, 320pp.

This volume publishes the reports of the Chemistry section of the All-Union Sci. Conf. on Use of Radioactive and Stable Isotopes and Radiation in National Economy and Science, organized by the All-Union Institute for Utilization of Atomic Energy (Institute of Materials and Reactions), Moscow, 1963 April 1-5.

AUTHORS:

Kravkov, Yu. B., Bashkirov, A. N., 62-58-5-22/27
Butyugin, V. K., Liberov, L. G., Stepanova, N. D.

TITLE:

Conversions of Butylene on the Conditions of Synthesis of CO and H₂ by Way of Molten Iron Catalysts (Prevplashcheniya butilena v usloviyakh sinteza iz CO i H₂ nad plavlenymi zheleznymi katalizatorami)

PERIODICAL:

Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 642-644 (USSR)

ABSTRACT:

The present report is a trial of investigating the ways of conversion of the olefins forming in the process of the synthesis of the hydrocarbons and of the oxygen-containing compounds of CO and H₂. Butylene marked by means of the carbon isotope C¹⁴ in the state (polozhenii) 1 served as indicator of the behavior of olefin under the conditions given by the synthesis. The experiment has shown that butylene does not participate in the formation of alcohols, as well, as in the formation of highest hydrocarbons (by way of C₉) neither and that it is no intermediate product. Butylene can react with CO and H₂ under the investigated conditions by producing a C₅-hydrocarbon. It also submits to dehydration, oxidation and hydro-

Card 1/2

Conversions of Butylene on the Conditions of Synthesis of CO
and H₂ by Way of Molten Iron Catalysts

62-58-5-22/27

cracking. There are 1 figures, 1 table, and 11 references,
9 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute
AS USSR)

SUBMITTED: January 2, 1958

1. Hydrogen isotopes--Synthesis
2. Carbon monoxide--Synthesis
3. Ethylenes--Chemical reactions
4. Butylene--Chemical reactions
5. Carbon isotopes (Radioactive)--Applications

Card 2/2

AUTHORS: Kagan, Yu. B., Bashkirov, A. N.,
Kryukov, Yu. B., Loktev, S. M., Orlova, N. A. 307/62-58-10-19/25

TITLE: On the Mechanism of the Catalytic Efficiency of Fused
Iron Catalysts in the Synthesis of CO and H₂ (O mehanizm
kataliticheskogo deystviya plavlenykh zheleznykh
katalizatorov sinteza iz CO i H₂)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
1953, Nr 10, pp 1274 - 1275 (USSR)

ABSTRACT: In an earlier paper the authors showed that immediately after
the reduction (by hydrogen at 1000°) fused iron cata-
lysts in the hydrocarbon synthesis of CO and H₂
are not active any more. Only under the working
conditions of the synthesis when the gas mixture CO+H₂
is passed through the catalyst gradually becomes active
(for 18-20 hours). This phenomenon may be explained
by a number of simultaneous reactions competing with
each other. Due to the course of these reactions com-
peting with each other the metallic iron regenerates
often (under the conditions of the synthesis) from its

Card 1/2

On the Mechanism of the Catalytic Efficiency of Fused Iron Catalysts in the Synthesis of CO and H₂ SOV/62-58-10-19/25

compounds, and at the surface of the operating catalyst the dynamic equilibrium of the surface phases of different chemical structure is obtained. As a consequence of these processes the activation of the catalyst occurs. Neither the iron itself nor compounds that might be formed from it are the reason for the activation of the catalyst surface. The hypothesis formed for the chain mechanism of the catalytic efficiency of iron catalysts (according to which the synthesis of CO and H₂ is caused by the reactions of carbon and hydrogen monoxide with iron and its compounds on the surface of the operating catalyst) was described in detail by the authors. There are 1 table and 1 reference, which is Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute AS USSR)

SUBMITTED: April 8, 1958
Card 2/2

KRYUKOV, Yu.B.; BUTYUGIN, V.K.; LIBEROV, L.O.; STEPANOVA, N.A.; BASHKIROV, A.N.

Synthesis of butyl alcohol containing radioactive carbon C¹⁴. Trudy
Inst.nefti 12:299-303 '58.
(Butyl alcohol) (Carbon--Isotopes)

(MIRA 12:3)

KAGAN, Yu.B.; BASHKIROV, A.N.; KRYUKOV, Yu.B.; LOKTEV, S.M.

Formation of the active surface of fused iron catalysts for
synthesis from CO and H₂. Khim i tekhn. topl. i gazel 3 no.3:
14-22 Mr '58. (MIRA 11:3)

1. Institut nefti AN SSSR.
(Catalysts) (Iron oxides) (Hydrocarbons)

AUTHORS:

Kryukov, Yu. B., Bashkirov, A. N., Butyagin, V. K.,
Licerov, L. G., Stepanova, N. D.

20-119-6-27/56

TITLE:

On the Uniformity of the Mechanism of Synthesis of Hydrocarbons and Oxygen Containing Compounds of CO and H₂.
(O jedinstvenosti mehanizma sinteza uglevodorodov i kislorodosoderzhashchikh soedinenii iz CO i H₂)

PERIODICAL:

Doklady Akademii nauk SSSR; 1958, Vol. 119, No. 6, pp. 1152-1155
(USSR)

ABSTRACT:

For the synthesis of CO and H₂ different schemes were proposed. According to them both processes mentioned in the title proceed independent of each other in two different ways. (Refs 1-5). Contrary to this fact experimental data exist which permit the assumption that a uniform mechanism exists in introducing the process of synthesis and in the structure of carbon chains of the aliphatic compounds from CO under the influence of hydrogen. In order to prove that, the authors have experimentally investigated the ways of conversion of alcohols under the real conditions of synthesis, if the primary products of syn-

Card 1/3

20-10-6-27/56

On the Uniformity of the Mechanism of Synthesis of Hydrocarbons and Oxygen Containing Compounds of CO and H₂

This represents a carbon alcohol mixture. Butanol marked by C¹⁴ and methanol, which were added to the gas of synthesis in such quantities that the conditions existing on the surface of the catalyst were not disturbed, served as indicators of the behavior of the alcohols formed of CO and H₂. Molten iron catalyst under high pressure (about 150 atmospheres excess pressure) served for this purpose. Figure 1 shows typical results. From figure 2 it is to be seen that methanol is much more easily subject to different conversions than butanol. From the totality of the obtained results follows that the processes of synthesis of hydrocarbons and oxygen containing compounds of CO and H₂ are connected with each other. On the molten iron catalyst the aforementioned compounds and the alcohols possess a common source of origin. This is an unstable intermediate complex on the surface of the catalyst, which forms during the primary interaction between CO and H₂. This complex contains C₁, H₂ and O-atoms. It is named C₁ by the authors. It is able to condense with its equals, whereby the formation of the carbon-carbon bond, furthermore that of a new oxygen containing compound with 2 carbon C₂-atoms

Card 2/3

On the Uniformity of the Mechanism of Synthesis of Hydrocarbons and Oxygen
Containing Compounds of CO and H₂ 20-119-6-27/56

is guaranteed. The further growth takes place thanks to the continuous connection of C₁ to the growing complexes C₂; C₃, C₄ and so on. Also the molecules CO and H₂ can be taken up and a further hydration of the growing complexes until the formation of a stable compound (aldehyde, alcohol, olefin, or paraffin) seems to be not impossible. There are 2 figures and 11 references, 3 of which are Soviet.

ASSOCIATION: Institut naftii Akademii Nauk SSSR
(Birovum Institute AS USSR)

PRESENTED: December 26, 1957, by A. V. Topantsev, Member, Academy of Sciences, USSR

SUBMITTED: December 24, 1957

Card 3/3

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1

KAGAN, Yu.B.; BASHKIROV, A.N.; MOROZOV, N.G.; KRYUKOV, Yu.B.; ROZOVSKIY, A.YA.

Hydrogenating capacity of fused iron catalysts in the synthesis
from CO and H₂. Trudy Inst.nefti 13:167-179 '59. (MIRA 13:12)
(Catalysts) (Hydrogenation)

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920003-1"

S/195/60/001/002/006/010
B004/B067

AUTHORS: Kryukov, Yu. B., Bashkirov, A. N., Liberov, L. G.,
Butyugin, V. K., Stepanova, N. D., Kagan, Yu. B.

TITLE: Conversions of Iron Carbide Under the Conditions of the
Synthesis of Hydrocarbons From Carbon Monoxide and Hydrogen

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 2, pp. 274 - 281

TEXT: The present paper was presented at the All-Union Conference on
Organic Catalysis in November 1959. The authors attempted to explain the
part played by carbides as intermediate compounds in the synthesis of
hydrocarbons. They used a standard iron catalyst with chromium
admixture, which was reduced at 1000°C and activated at 300°C and 20 atm
with the initial gas mixture CO + H₂ (1 : 1), which contained C¹⁴O. The
catalyst, enriched with radioactive iron carbide, was then treated with
pure CO + H₂. The radioactivity of the products formed was then measured.
The authors found that mainly the following reactions took place in iron

Card 1/2